

U.S. Serial No. 10/648,916
Reply to Office Action Dated 3/30/06

Docket No. 1232-5125

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all previous claim listings.

Listing of claims:

1. **(currently amended)**: A radiation image sensing apparatus for sensing a radiation by a sensing unit and outputting an electric signal corresponding to the sensed radiation, wherein said sensing unit comprising:

a substrate;

a conversion section arranged on said substrate and, configured to have a first semiconductor conversion element for converting the radiation into an electrical signal and a switch element connected to the first semiconductor conversion element, for switching the electrical signal; and

a second semiconductor conversion element arranged on said substrate, configured to convert the radiation into an electrical signal for detecting a dose of the radiation incident on said conversion section,

wherein each of the first semiconductor conversion element and the second semiconductor conversion element has a semiconductor layer which has originally been ~~are formed on the same~~ a common layer on the substrate, and

wherein said second semiconductor conversion element has a structure of a field effect transistor.

2. **(currently amended)**: The apparatus according to claim 1, characterized in that said switch element has a semiconductor layer thinner than said semiconductor layer layers of said first and second semiconductor conversion elements.

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3. (canceled)

4. (canceled)

5. (canceled)

6. (original): The apparatus according to claim 1, characterized by further comprising a wavelength conversion member which is arranged above said first and second semiconductor conversion elements to convert a wavelength of the radiation that becomes incident.

7. (original): The apparatus according to claim 1, characterized in that said first and second semiconductor conversion elements are stacked above said switch element.

8. (previously amended): The apparatus according to claim 1, characterized by further comprising a bias line which is connected to a first electrode arranged for said first semiconductor conversion element.

9. (original): The apparatus according to claim 1, characterized in that said switch element comprises a thin film transistor.

10. (original): The apparatus according to claim 1, characterized in that said second semiconductor conversion element detects the total dose of the radiation.

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11. (**currently amended**): The apparatus according to claim ~~[[9]]~~ 8,
characterized in that

said first semiconductor conversion element and said switch element are
arranged in a matrix on said substrate,

the first electrode is connected to one of a plurality of bias lines arranged
in parallel, and

the a second electrode is connected to the bias line to which the first
electrode of said first semiconductor conversion element adjacent to said second
semiconductor conversion element is connected.

12. (**currently amended**): A radiation image sensing apparatus for sensing a
radiation by a sensing unit and outputting an electric signal corresponding to the
sensed radiation, wherein said sensing unit comprising:

a substrate;

a conversion section arranged on said substrate and, configured to have a
first semiconductor conversion element for converting the radiation into an
electrical signal and a switch element connected to the first semiconductor
conversion element, for switching the electrical signal; and

a second semiconductor conversion element arranged on said substrate,
configured to convert the radiation into an electrical signal for detecting a dose of
the radiation incident on said conversion section,

wherein:

each of the first semiconductor conversion element and the second
semiconductor conversion element has a semiconductor layer which has
originally been formed on a common layer on the substrate. The apparatus
according to claim 8 ~~claim 11~~, characterized in that

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there exist a first pixel which includes said first semiconductor conversion element and said second semiconductor conversion element and a second pixel which includes said first semiconductor conversion element and no second semiconductor conversion element,

an area of the first pixel is substantially equal to that of the second pixel, and

a light-receiving area of said first semiconductor conversion element in the first pixel is smaller than that of said first semiconductor conversion element in the second pixel.

13. (original): The apparatus according to claim 12, characterized in that

a plurality of said second semiconductor conversion elements are placed in said conversion section, and

when an array of the first and second pixels which are arranged in a direction in which the bias line runs is defined as a row, and an array of the first and second pixels which are arranged in a direction perpendicular to the row is defined as a column, at least some of said plurality of second semiconductor conversion elements are formed in a plurality of second pixels which constitutes the same row or column.

14. (currently amended): The apparatus according to claim 8, characterized in that said second semiconductor conversion element has a structure of a field effect transistor which uses the a second electrode as one of source and drain electrodes.

15. (original): The apparatus according to claim 14, characterized in that at least one electrode selected from the group consisting of the other of the source and

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drain electrode of said second semiconductor conversion element and a control electrode is connected between a plurality of second pixels.

16. (canceled)

17. (canceled)

18. (original): The apparatus according to claim 8, characterized in that the second electrode has a transparent electrode film which comes into contact with the bias line.

19. (original) The apparatus according to claim 8, characterized in that said second semiconductor conversion element has an ohmic contact layer which comes into contact with the bias line as the second electrode.

20. (canceled)

21. (original): The apparatus according to claim 8, characterized in that the first electrode has a transparent electrode film which comes into contact with the bias line.

22. (original): The apparatus according to claim 8, characterized in that said first semiconductor conversion element has an ohmic contact layer which comes into contact with the bias line as the first electrode.

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23. **(currently amended)**: A radiation image sensing apparatus for sensing a radiation by a sensing unit and outputting an electric signal corresponding to the sensed radiation, wherein said sensing unit comprising:

a substrate;

a conversion section arranged on said substrate, ~~configure~~ configured to have a first photoconductive element, a capacitive element connected to the first photoconductive element, and a switch element connected to the capacitive element; and

a second photoconductive element ~~which is~~ arranged on said substrate, configured to convert the radiation incident on said conversion section into an electrical signal for detecting a dose of the radiation,

wherein each of the first photoconductive element and the second photoconductive element has a semiconductor layer which has originally been ~~are~~ formed on ~~the same~~ a common layer on the substrate; and

wherein said second photoconductive element has a structure of a field effect transistor.

24. **(canceled)**

25. **(canceled)**

26. **(canceled)**

27. **(canceled)**

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28. (new): A radiation image sensing apparatus for sensing a radiation by a sensing unit and outputting an electric signal corresponding to the sensed radiation, wherein said sensing unit comprising:

a substrate;

a conversion section arranged on said substrate, configured to have a first photoconductive element, a capacitive element connected to the first photoconductive element, and a switch element connected to the capacitive element; and

a second photoconductive element arranged on said substrate, configured to convert the radiation incident on said conversion section into an electrical signal for detecting a dose of the radiation,

wherein:

each of the first photoconductive element and the second photoconductive element has a semiconductor layer which has originally been formed on a common layer on the substrate,

there exists a first pixel which includes said first photoconductive element and said second photoconductive element and a second pixel which includes said first photoconductive element and no second photoconductive element,

an area of the first pixel is substantially equal to that of the second pixel, and

a light-receiving area of said first photoconductive element in the first pixel is smaller than that of said first photoconductive element in the second pixel.

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29. (new): The apparatus according to claim 28, characterized in that a plurality of said second photoconductive elements are placed in said conversion section, and

when an array of the first and second pixels which are arranged in a direction in which a bias line runs is defined as a row, and an array of the first and second pixels which are arranged in a direction perpendicular to the row is defined as a column, at least some of said plurality of second photoconductive elements are formed in a plurality of second pixels which constitutes the same row or column.

30. (new): The apparatus according to claim 28, characterized in that said first and second photoconductive elements are arranged over said switch element.

31. (new): The apparatus according to claim 12, characterized in that said first and second semiconductor conversion elements are arranged over said switch element.

32. (new): The apparatus according to claim 23, characterized in that said first and second photoconductive elements are arranged over said switch element.